

Original Article

Outcome of Total Laryngectomy in Regional Hospitals of Bangladesh

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Abstract:

Objectives: To analyze post operative complications, local recurrence, functional outcome of speech & swallowing and survival rate following total laryngectomy.

Methods: This prospective observational study was done in four major tertiary care medical college hospitals of Bangladesh from July 2000 to December 2019. All operations were done by a single surgeon, one of the authors of this study based on the personal experience. 45 patients were selected who underwent total laryngectomy for biopsy proven advanced (T_3 and T_4) laryngeal cancer as primary case & recurrent cases following radiotherapy. Patients were followed up monthly for three months and then six monthly for two years and yearly for rest of their life.

Results: Age of the patients ranged from 42 to 80 years with mean age 56.7 years. In postoperative period 03 (6.6%) patients developed wound infection, 03 (6.6%) stomal stenosis, 03 (6.6%) stomal recurrence, 02 (4.4%) seroma, 02 (4.4%) pharyngo-cutaneous fistula and 01 (2.2%) case developed pharyngeal stenosis. In post laryngectomy voice rehabilitation 33 (73.3%) cases used esophageal voice, 07 (15.5%) cases used electrolarynx and 05 (11.1%) cases used bloom singer valve. Out of oesophageal speech, 2 patients had poor speech, Regarding swallowing all patients had very good swallowing except one patient who got pharyngeal stenosis, needed dilation. 3 patients died in subsequent 2 years follow-up and overall survival was 93.3%.

Conclusion: Outcome of total laryngectomy depends on site and size of tumour, nodal metastases, recurrent cases and co-existing co-morbidities. Total laryngectomy with or without radiotherapy offers significantly higher local control and survival benefit with advanced laryngeal cancer, compared to radiotherapy only.

Key words: Carcinoma larynx, total laryngectomy, complications.

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Introduction:

Incidence of head and neck cancer is increasing day by day all over the world including Bangladesh. It accounts for 4% of new malignancy in the USA each year¹.

Laryngeal cancer is the commonest carcinoma of the head and neck region². A higher incidence of laryngeal carcinoma has been reported from Asian population. Carcinoma larynx is an important malignancy in head and neck region. It represents 1% of all malignancies. Despite advances in chemo-radiotherapy (RT), surgery continues to play an important role in the management of advanced laryngeal cancer. Laryngeal carcinomas are identified by their location in one of three anatomic regions: supraglottic, glottic, or sub-glottic³. Symptoms of laryngeal cancer also vary according to location, size and degree of tumour invasion. Advanced T₃ and T₄ laryngeal carcinoma may present with hoarseness of voice, dysphagia or with compromised airway. The treatment of patients with laryngeal carcinoma should be planned to provide optimal survival, free of disease with maximum functional results. The treatment for T₁ and T₂ lesions usually involves radiotherapy or endoscopic surgery with or without laser. Total laryngectomy alone or in conjunction with neck dissections and/or radiotherapy with or without chemotherapy is used for advanced T₃ and T₄ lesions⁴. The British Medical Journal Best Practice Guide suggests that treatment of advanced T₃-T₄ glottic carcinoma should involve either concurrent chemoradiotherapy or surgery⁵. For T₃ glottic carcinoma chemoradiation or surgery will not offer any further benefit in overall survival and cancer specific survival⁶. Patients with T₃ laryngeal carcinoma (glottic or supraglottic) treated surgically with or without radiotherapy, have higher overall survival compared to patients treated nonsurgically with RT, with or without chemotherapy^{7,8}.

The first laryngectomy was performed by Billroth in 1873 and for much of the 20th century; this procedure has been recognized as the gold standard treatment for advanced cancers of the larynx and hypopharynx⁹. Complications of laryngectomy such as pharyngo-cutaneous fistula, wound infection, chyle leak, swallowing and airway problems have a significant impact on morbidity causing prolonged hospitalization and inevitably increased health care costs. Pharyngeal stenosis can result in swallowing difficulty¹⁰, while stomal recurrence may render the tumour incurable thus adversely affecting the prognosis¹¹. Many factors have been implicated in the development of complications including previous radiotherapy, preoperative tracheostomy, radical neck dissection, and extensive surgery¹². The prognosis for small laryngeal cancers that do not have lymph node metastasis is good with cure rates of 75-95%, depending on the site, the size of the tumor, and the extent of infiltration. Five year survival for Stage I is >95%, Stage II 85-90%, Stage III 70-80%, and Stage IV 50-60%¹³.

This retrospective multi centric study was conducted to find out various complications after total laryngectomy with respect to their presentation, diagnosis and management.

Materials and Methods:

Type of study: Retrospective observational study.

Place of Study: ENT and Head Neck Surgery Department of Shaheed Ziaur Rahman Medical College Hospital, Bogura, Dhaka Medical College Hospital, Dhaka, Rajshahi Medical College Hospital, Rajshahi & Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh.

Duration: From July 2000 to June 2019.

Number of patients: Out of 45 patients, 6 from Shaheed Ziaur Rahman Medical College, Bogura 15 from Dhaka Medical College

Hospital, Dhaka, 14 from Rajshahi Medical College Hospital Rajshahi and rest 10 from Shaheed Suhrawardy Medical College Hospital, Dhaka

Inclusion criteria:

1. T₃-T₄ laryngeal cancer with or without lymph node metastases.
2. Recurrent laryngeal cancer following chemoradiation.

Exclusion criteria:

1. T₁ & T₂ laryngeal cancer
2. Advanced laryngeal cancer involved pyriform fossa, tongue base.
3. Patients with COPD and co-existing morbidities. Patients undergoing partial laryngectomy were also excluded from this study.

Every patient was selected pre-operatively by CT Scan of Neck, thorough clinical examination and Direct Laryngoscopy under general anesthesia to see the primary site and extension and biopsy was taken for histological confirmation of diagnosis. Preoperative counseling regarding the nature, consequences and outcome of the disease was done. Surgery of all the patients were performed in four tertiary level hospitals with best possible facilities. All operations were done by a single surgeon, one of the authors of this study based on his personal experience. Regular post operative monitoring were done to assess any post-operative complications. Oral feeding was started on 11 to 12th postoperative day and between fourteen to twenty days all patients were discharged from hospital and a regular follow up visit record was maintained. Patients were followed up monthly for three months and then six monthly for two years and yearly for rest of their life. The patients were examined at regular intervals monthly for three months. Functional and quality of life was

assessed regarding speech and swallowing. Later on patients were called for follow up after every six months for one year. During follow up the patients were examined and searched for complications, if any. Records were maintained during their visit.

Results:

Age of the patients ranged from 42 to 80 years with mean age 56.7 years. Out of 45, 44 were male and 1 was female patient with male female ratio 44:1. Topographically 29 (64.4%) cases were supraglottic, 15 (33.3%) cases were glottic tumors and 1 (2.2%) case was subglottic (Figure-1). Among these patients 34 (75.5%) cases were done as primary surgery and rest 11 (24.5%) cases were done in recurrent cases following chemo radiation (Table-I). Most common symptoms were dysphagia 77.7% followed by hoarseness of voice 73.3% and stridor 55.5%. Regarding treatment procedure, total laryngectomy with neck dissection followed by chemo radiation 27 (60%), total laryngectomy 10 (22.2%), followed by total laryngectomy with postoperative radiotherapy 08 (17.8%) (Table-II). In postoperative follow up 3 (6.6%) patients developed wound infection, 3 (6.6%) stomal stenosis, stomal recurrence 3 (6.6%), 2 (4.4%) patients developed seroma, 2 patients 4.4% developed pharyngo-cutaneous fistula, 1 patient (2.2%) developed pharyngeal stenosis (Table-III). Regarding voice rehabilitation esophageal voice developed in 33 patients 73.3%, 7 patients 15.6% used electrolarynx, 5 (11.1%) patient used Bloom singer valve (Table IV). During postoperative follow up, one patient died after two months, one patient on six month and one patient on 12 months. Rest of the patients were followed up to two years without any recurrence. So 2 years survival was 93.3% and 5 years survival was not recorded as because most of the patients were lost from follow up after 2 years excepting 1 patient who survived up to 19 years following laryngectomy. All operations were done by single surgeon.

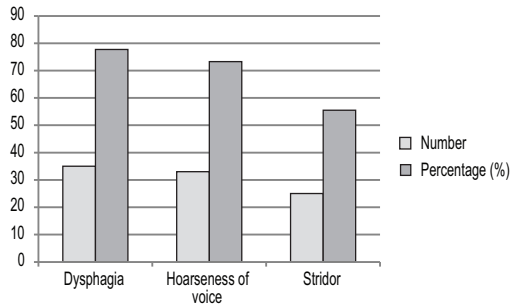


Figure-1: Topographical distribution (n-45)

Table I :
Number of surgery (n-45)

Operations	Number	Percentage
Primary cases	34	75.5
Recurrent cases	11	24.5

Table II :
Treatment procedures (n-45)

Types of surgery	Number	Percentage
Total laryngectomy with neck dissection (II III, IV, V) followed by chemo radiation	27	60.0
Total laryngectomy	10	22.2
Total laryngectomy followed by post operative radiotherapy	08	17.8

Table III :
Post operative complications (n-45)

Complications	Number	Percentage
Wound infection	03	6.6
Stomal stenosis	03	6.6
Stomal recurrence	03	6.6
Seroma	02	4.4
Pharyngocutaneous	02	4.4
Fistula		
Pharyngeal stenosis	01	2.2

Table IV :
Post laryngectomy voice rehabilitation (n-45)

Voice	Number	Percentage
Esophageal voice	33	73.3
Electrolarynx	07	15.5
Bloom singer valve	05	11.1

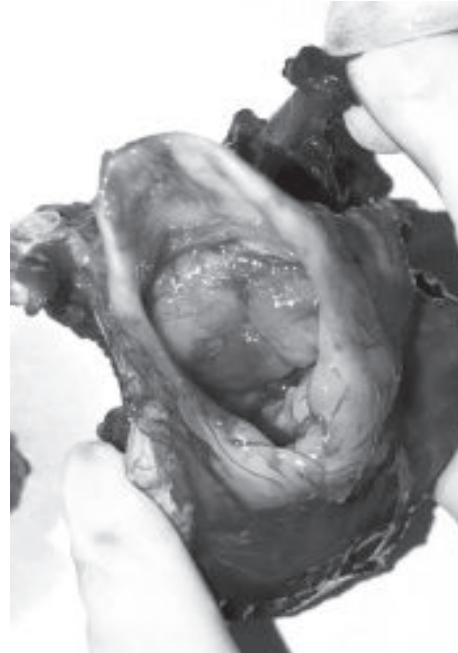


Figure-2 : Post laryngectomy specimen.



Figure-3 : Post laryngectomy patient at 2 years follow up



Figure-4 : Post laryngectomy patient with Bloom Singer valve.

Discussion:

This prospective observational study focused on complications following total laryngectomy, functional status regarding swallowing and speech, local recurrence and survival of patients with locally advanced T3-T4 laryngeal cancer. One study done by Spector et al, on 96 patients of T4 glottic carcinoma all except 7 underwent total laryngectomy with neck dissection and postoperative radiotherapy showed 75% locoregional control with 18% local recurrence¹⁴. In Bangladesh the cancer of larynx and hypo pharynx comprised around 21% of all cancer in males¹⁵. In this study age distribution of laryngeal carcinoma ranged from 42 to 80 years with mean age 56.7 years. This finding is almost consistent with the study of Aslam MJ et al¹⁶. In this series, among 45 patients, 29(64.4%) had supraglottic growth, 15(33.3%) had glottic growth and 1(2.2%) had subglottic growth (Figure-1). The incidence of supraglottic growth is higher in our country.

In the present study, pharyngo-cutaneous fistula developed in 2(4.4%) patients (Table-

III) but one study of Parikh SR et al, who in large series of 125 patients of laryngectomy reported 22% incidence of fistula¹⁷. The highest incidence of pharyngo-cutaneous fistula was reported as 66% by Bresson K et al¹⁸. The lowest incidence of pharyngo-cutaneous fistula (2%) was reported by Thawley SE which is similar to our study¹⁹. Esophageal speech was the mainstay of alaryngeal communication until the early 1980s and had been used as a method of voice restoration for over 100 years²⁰. In our series out of 45 patients 33 (73.3%) used oesophageal voice (Table-IV). Although fistula voice is the most effective way of post laryngectomy voice rehabilitation but the prosthesis is very expensive for the patients, so we encouraged oesophageal voice.

Conclusion

Although organ preservation is more preferable than organ sacrifice but most of the patients presented with advanced laryngeal cancer with nonfunctional larynx where total laryngectomy with or without radiotherapy offered good disease free survival and better functional outcome with minimal postoperative complications.

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